

In re Patent Application of:
COBB ET AL.
Serial No. 09/393,639
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B1
B2
a transmitter for transmitting the QPSK waveform produced by said QPSK waveform generator.

B3
17. (Twice Amended) A method comprising the steps of:

- (a) providing a carrier signal comprising in-phase (I) and quadrature (Q) components;
- (b) providing a data signal comprising I and Q components and biasing the I and Q components of the data signal with at least one offset comprising a spreading waveform; and
- (c) combining the I and Q components of the carrier signal with the biased I and Q components of the data signal, respectively, to produce a quadrature phase shift keyed (QPSK) waveform.

B4
17. (Twice Amended) A method comprising the steps of:

- (a) receiving a quadrature phase shift keyed (QPSK) waveform having in-phase (I) and quadrature (Q) components of a carrier modulated with I and Q components of a data signal, at least one of the I and Q components of the data signal being biased by an offset comprising a direct current (DC) offset voltage; and
- (b) conducting non-regenerative recovery of the QPSK waveform received in step (a) to extract said carrier signal based upon the offset.

B5
17. (Amended) A method of transmitting information comprising the steps of:

- providing a data signal representative of the information and comprising in-phase (I) and quadrature (Q) components;

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biasing at least one of the I and Q components with an offset comprising a direct current (DC) offset; generating a quadrature phase shift keyed (QPSK) waveform based upon a carrier signal and the at least one biased component; and transmitting the QPSK waveform.

B4
Cont.

20 *17*
28. (Amended) A method according to claim *23*, wherein the at least one offset comprises a respective offset for each of the I and Q components of the data signal.

Please add the following claims:

29. (New) A method of transmitting information comprising the steps of:
providing a data signal representative of the information and comprising in-phase (I) and quadrature (Q) components;
biasing at least one of the I and Q components with an offset comprising a spreading waveform;
generating a quadrature phase shift keyed (QPSK) waveform based upon a carrier signal and the at least one biased component; and transmitting the QPSK waveform.

B5

30. (New) A method according to Claim *29*, further including the steps of:
receiving the transmitted QPSK waveform; and processing the received QPSK waveform to extract said carrier signal therefrom.

31. (New) A method according to Claim *30*, further including the step of:

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processing the received QPSK waveform using the carrier signal extracted therefrom to derive said data signal.

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32. (New) A method according to Claim *31*, wherein said data signal is encoded with a forward error correction code, and further including the step of decoding the encoded data signal to recover said information from said data signal.

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33. (New) A method according to Claim *32*, wherein said forward error correction code is one capable of extending error rate performance to a value of energy per bit to noise density ratio (E_b/N_o) less than 4 dB.

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34. (New) A method according to claim *33*, wherein generating the QPSK waveform comprises multiplying the carrier signal with the digital signal.

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35. (New) A communication system comprising:
a quadrature phase shift keyed (QPSK) waveform generator for generating a QPSK waveform based upon a carrier signal and a data signal, the data signal being representative of information to be transmitted and comprising I and Q components, and said QPSK waveform generator biasing at least one of the I and Q components with an offset prior to generating the QPSK waveform, the offset comprising a spreading waveform; and

a transmitter for transmitting the QPSK waveform produced by said QPSK waveform generator.

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36. (New) A communication system according to Claim *35*, further including a receiver which is operative to receive said QPSK waveform and to extract said carrier signal therefrom.